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| 09/674,457      | 01/05/2001  | Anders Larsson       | HO-P02191US0        | 8539             |

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1743

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**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Application Number: 09/674,457  
Filing Date: January 05, 2001  
Appellant(s): LARSSON ET AL.

**MAILED**

DEC 28 2006

**GROUP 1700**

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For Appellant

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed 10/04/2006 appealing from the Office action mailed 3/9/06.

**(1) Real Party in Interest**

A statement identifying by name the real party in interest is contained in the brief.

**(2) Related Appeals and Interferences**

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

**(3) Status of Claims**

The statement of the status of claims contained in the brief is correct.

**(4) Status of Amendments After Final**

No amendment after final has been filed.

**(5) Summary of Claimed Subject Matter**

The summary of claimed subject matter contained in the brief is correct.

**(6) Grounds of Rejection to be Reviewed on Appeal**

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

**(7) Claims Appendix**

The copy of the appealed claims contained in the Appendix to the brief is correct.

**(8) Evidence Relied Upon**

No evidence is relied upon by the examiner in the rejection of the claims under appeal.

**(9) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 43-47 are rejected under 35 U.S.C. 102(e) as being anticipated by Kellogg et al. (6,143,248). The Examiner believes Applicant is familiar with the Kellogg reference at this point. The Examiner has reinstated the 102(e) rejection under Kellogg due to the discovery of several missed passages from Kellogg. The Examiner

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apologizes for the oversight and directs Applicant to columns 8, 10 and 11 of Kellogg.

In column 10, line 58 through column 11, line 54, Kellogg recites the following:

(103) In a fourth embodiment of the invention is provided a centrifugal rotor or Microsystems platform for providing centripetally-motivated fluid micromanipulation, wherein a volume of a fluid sample, most preferably comprising a biological sample, in a first fluid chamber of the rotor or platform is delivered in a stream of droplets into a second fluid chamber on the rotor or platform. In such embodiments of the invention, said rotor or platform is a rotatable platform, comprising a substrate having a first flat, planar surface and a second flat, planar surface opposite thereto, each surface comprising a center about which the platform is rotated. In said centrifugal rotor or microplatform is provided a first surface that comprises the following components in combination:

(104) 1. An **entry port** comprising a depression in the first surface having a volumetric capacity of about 1 to about 150  $\mu\text{L}$  and that is accessible to an operator for application of a fluid sample, most preferably a fluid comprising a biological sample. The entry port is fluidly connected with

(105) 2. A **first microchannel** which defines a cross-sectional area of about 0.02 mm to about 1 mm in diameter that extends radially from the center of the platform and defines a first end proximally arrayed towards the center of the platform and is fluidly connected with the entry port, and a second end distally arrayed from the center of the platform. The first microchannel is further fluidly connected with

(106) 3. A **first fluid chamber** having a depth in the surface of the platform equal to or greater than the first microchannel and positioned radially more distant from the center of the platform than the entry port. Rotation of the platform at a first rotational speed motivates displacement of the fluid in the entry port through the first microchannel and into the first fluid chamber.

(107) The platform further comprises:

(108) 4. A **second microchannel**, wherein the second microchannel extends radially from the center of the platform and defines a first end proximally arrayed towards the center of the platform and a second end distally arrayed from the center of the platform. The second microchannel is fluidly connected with the first fluid chamber at the first end of the microchannel and the second microchannel is fluidly connected at the second end of the microchannel with

(109) 5. A **second fluid chamber** having a depth in the surface of the platform equal to or greater than the second microchannel and positioned radially more distant from the center of the platform than the first fluid chamber.

(110) **The second end of the second microchannel comprises a surface that is non-wetting or alternatively the second end of the second microchannel defines an opening into the second fluid reservoir. Rotation of the platform at the first rotation speed does not motivate flow of the displacement fluid through the second microchannel. Rotation of the platform at a second rotational speed that is greater than the first rotational speed motivates flow of the fluid from the first fluid chamber, through the second microchannel and into the second fluid chamber.** As a consequence of the properties of the second end of the second microchannel, flow of the fluid into the second fluid chamber comprises a stream of droplets from about 0.1 to about 10  $\mu\text{L}$  in volume. In addition, each of the microchannels and the fluid chambers also comprise air displacement channels whereby air displaced by fluid movement is vented to the surface of the platform.

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This passage recites two reservoirs and an entry port connected by two capillary channels on a substrate. The second capillary has a non-wettable portion that blocks fluid flow. Flow past the non-wetting surface in the second end of the second microchannel is achieved by spinning the disk.

Claims 43-47 are also rejected under 35 U.S.C. 102(a) as being anticipated by Kellogg et al. (WO 98/07019). Kellogg (WO 98/07019) recites the same teachings cited from Kellogg ('248).

### ***Inventorship***

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 48 and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kellogg et al. (6,143,248). Kellogg teaches every element of claims 48 and 49 except for reagents in the liquid sample and a liquid sample between 1-10 nanoliters. It would have been obvious to add reagents to the liquid sample. Kellogg already teaches reagents in the reservoirs of the device. One would add them with the sample in order to allow for longer mixing times. It would have been obvious to use 1-10 nanoliters of sample. One would use smaller amounts of sample to conserve the sample material.

## **(10) Response to Argument**

### **A. Issues Under 35 U.S.C. 102(e) claim rejections**

1. Appellant has argued that the Examiner must pick and choose from the teachings of Kellogg to arrive at the claimed invention (Appeal Brief, page 7, lines 10-13); and that Kellogg lacks written description for Appellant's claimed invention (page 7, lines 19-29).

The Examiner respectfully disagrees. No picking and choosing from the teaching of Kellogg is required. The passage from Kellogg cited by the Examiner (column 10, line 58 through column 11, line 54 – reproduced above) clearly recites the structural features required by claim 43 (column 11, lines 5-40). In addition, Kellogg recites the steps of flowing the fluid until it reaches a non-wettable (i.e. hydrophobic) portion of the pathway, and then applying additional force to allow the fluid to pass the non-wettable section (column 11, lines 39-54).

2. Appellant has argued that Kellogg does not disclose an inlet that is “capable of handling less than about 500 nl” (page 8); and that the Examiner has not provided “a basis in fact and/or technical reasoning” (page 9, lines 1-10)

The Examiner disagrees. The Examiner is aware of His duty to provide a basis in fact and/or technical reasoning”. This was clearly provided in Paragraph 9 of the Office Action mailed 3/9/06:

Therefore, the following is the basis for the Examiner’s rejection of the disputed limitation: **An entry port having a volumetric capacity of 1000-100,000 or 1000-150,000 nanoliters is inherently capable of handling less than about 500 nanoliters.**



The Examiner now refers to the MPEP Section 2111, V:

V. ONCE A REFERENCE TEACHING PRODUCT APPEARING TO BE SUBSTANTIALLY IDENTICAL IS MADE THE BASIS OF A REJECTION, AND THE EXAMINER PRESENTS EVIDENCE OR REASONING TENDING TO SHOW INHERENCY, THE BURDEN SHIFTS TO THE APPLICANT TO SHOW AN UNOBVIOUS DIFFERENCE

"[T]he PTO can require an applicant to prove that the prior art products do not necessarily or inherently possess the characteristics of his [or her] claimed product. Whether the rejection is based on inherency' under 35 U.S.C. 102, on prima facie obviousness' under 35 U.S.C. 103, jointly or alternatively, the burden of proof is the same...[footnote omitted]." The burden of proof is similar to that required with respect to product-by-process claims. In re Fitzgerald, 619 F.2d 67, 70, 205 USPQ 594, 596 (CCPA 1980) (quoting In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433-34 (CCPA 1977)).

The Examiner has provided reasoning that shows the input port of Kellogg is capable of handling less than about 500nl. The reasoning is that an inlet port having a volumetric capacity of 1000-150,000 is inherently capable of handling less than this volume. The inlet port is inherently capable of handling 500nl because the volume of the input port of Kellogg is larger than the 500 nl volume recited in Appellant's claim. Appellant has not provided any proof that the input port of Kellogg is **incapable** of handling less than about 500 nanoliters in response to the Examiner's reasoning. Appellant has instead directed arguments to the Examiner's choice of language in both describing the features of Kellogg and in the conveying of the Examiner's technical reasoning to Appellant. This is insufficient to overcome the 102 rejection.

3. Appellant has argued that the Examiner has not provided any teaching from Kellogg of the liquid having a surface tension  $> 18$  mN/meter or aqueous solution having a surface tension  $> 50$  mN/meter.

The Examiner directs Appellant to Paragraph 3 of the Office Action mailed 7/7/03 where the Examiner notes that Kellogg discloses the passing of both water and blood through their device. Water has a surface tension of 72 mN/meter and blood has a surface tension of 56 mN/meter.

**B. Issues under 35 U.S.C. 102(a) claim rejections**

1. Appellant has argued that the Examiner must pick and choose from the teachings of Kellogg to arrive at the claimed invention (Appeal Brief, page 7, lines 10-13); and that Kellogg lacks written description for Appellant's claimed invention (page 7, lines 19-29).

The Examiner respectfully disagrees. No picking and choosing from the teaching of Kellogg is required. The passage from Kellogg cited by the Examiner (page 15, line 22 through page 17, line 2 – reproduced above) clearly recites the structural features required by claim 43 (page 15, line 30 – page 16, line 24). In addition, Kellogg recites the steps of flowing the fluid until it reaches a non-wettable (i.e. hydrophobic) portion of the pathway, and then applying additional force to allow the fluid to pass the non-wettable section (page 16, lines 23-33).

2. Appellant has argued that Kellogg does not disclose an inlet that is "capable of handling less than about 500 nl" (page 8); and that the Examiner has not provided "a basis in fact and/or technical reasoning" (page 9, lines 1-10)

The Examiner disagrees. The Examiner is aware of His duty to provide a basis in fact and/or technical reasoning". This was clearly provided in Paragraph 9 of the Office Action mailed 3/9/06:

Therefore, the following is the basis for the Examiner's rejection of the disputed limitation: **An entry port having a volumetric capacity of 1000-100,000 or 1000-150,000 nanoliters is inherently capable of handling less than about 500 nanoliters.**

The Examiner now refers to the MPEP Section 2111, V:

V. ONCE A REFERENCE TEACHING PRODUCT APPEARING TO BE SUBSTANTIALLY IDENTICAL IS MADE THE BASIS OF A REJECTION, AND THE EXAMINER PRESENTS EVIDENCE OR REASONING TENDING TO SHOW INHERENCY, THE BURDEN SHIFTS TO THE APPLICANT TO SHOW AN UNOBVIOUS DIFFERENCE

"[T]he PTO can require an applicant to prove that the prior art products do not necessarily or inherently possess the characteristics of his [or her] claimed product. Whether the rejection is based on inherency' under 35 U.S.C. 102, on prima facie obviousness' under 35 U.S.C. 103, jointly or alternatively, the burden of proof is the same...[footnote omitted]." The burden of proof is similar to that

required with respect to product-by-process claims. In re Fitzgerald, 619 F.2d 67, 70, 205 USPQ 594, 596 (CCPA 1980) (quoting In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433-34 (CCPA 1977)).

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3. Appellant has argued that the Examiner has not provided any teaching from Kellogg of the liquid having a surface tension > 18 mN/meter or aqueous solution having a surface tension > 50mN/meter.

The Examiner directs Appellant to Paragraph 3 of the Office Action mailed 7/7/03 where the Examiner notes that Kellogg discloses the passing of both water and blood through their device. Water has a surface tension of 72 mN/meter and blood has a surface tension of 56 mN/meter.

**C. Issues under 35 U.S.C. 103(a) Claim rejections**

1. Applicant has argued that the Examiner has not provided sufficient motivation for the liquid sample to comprise reagents.

The Examiner disagrees and directs Appellant to Paragraph 7 of the Office Action mailed 3/9/06 where the Examiner states that one of ordinary skill would add reagents with the sample in order to increase the mixing time. Appellant concedes that Kellogg teaches reagents in reservoirs. The motivation for providing the reagents at the inlet would be to allow for mixing from the point of sample entry as opposed to simply mixing in the reservoirs. Providing a thorough mixing of the sample with reagents by extending the mixing time would be recognized by one of ordinary skill in the art as desirable in a chemical reaction.

2. Applicant has argued that the Examiner has not explained how the device disclosed in Kellogg would teach or suggest the use of sample volumes between 1 and 10nl. Appellant further argued that this is because Kellogg is incapable of handling such volumes.

The Examiner respectfully disagrees and directs Appellant to Paragraph 7 of the Office Action mailed 3/9/06 where the Examiner clearly stated that the motivation to use lesser amounts of sample would be to conserve the sample material. Appellant's further

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arguments appear to be directed to their belief that Kellogg is incapable of handling such a volume and not directed to obviousness. This argument was addressed above.

**(11) Related Proceeding(s) Appendix**

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.


Respectfully submitted,

Dwayne K. Handy

Conferees:

Jill A. Warden

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